PATENT

Atty Docket No.: 200403365-1
App. Ser. No.: 10/830,217

REMARKS

Favorable reconsideration of this application is respectfully requested in view of the amendments above and the following remarks. Claims 1-27 and 29-36 are pending of which claims 1, 23, 26, 29 and 34 are independent. Claim 28 is canceled.

Claims 29-33 were rejected under 35 U.S.C. §101 because the claimed invention is allegedly directed to non-statutory subject matter

Claims 1-2, 29-30 and 35-36 were rejected under 35 U.S.C. §102(b) as being anticipated by Evoy et al. (5,958,055), referred to as Evoy.

Claims 23, 26 and 27 were rejected under 35 U.S.C. §102(b) as being anticipated by Frantz et al. (5,557,557) , referred to as Frantz.

Claims 1-2, 12-13, 18, 21-22 and 29-30 were rejected under 35 U.S.C. §102(a) as being anticipated by Orenstien et al. (6,804,632) , referred to as Orenstien.

Claims 4-5 and 34 were rejected under 35 U.S.C. §103(a) as being unpatentable over Orenstien as applied to claims 1-2, 12-13, 18, 21-22 and 29-30 above, and further in view of Cai (6,501,999).

These rejections are respectfully traversed for the reasons stated below.

Claims 3, 6-11, 14, 15, 17, 19, 20, 28 and 31-33 were indicated as including allowable subject matter.

Allowable Subject Matter

The Examiner is thanked for indicating that claims 3, 6-11, 14, 15, 17, 19, 20, 28 and 31-33 include allowable subject matter.

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Claim Rejections Under 35 U.S.C. §101

Claims 29-33 are alleged as being directed to non-statutory subject matter because the computer readable medium is described in the specification to include signals. The rejection states, "For proper examination purposes, the claims are being interpreted as being embedded a computer readable storage medium." Accordingly, claim 29 has been amended to recite "computer readable storage medium", and the rejection is believed to be overcome.

Claim Rejections Under 35 U.S.C. §102

The test for determining if a reference anticipates a claim, for purposes of a rejection under 35 U.S.C. § 102, is whether the reference discloses all the elements of the claimed combination, or the mechanical equivalents thereof functioning in substantially the same way to produce substantially the same results. As noted by the Court of Appeals for the Federal Circuit in *Lindemann Maschinenfabrick GmbH v. American Hoist and Derrick Co.*, 221 USPQ 481, 485 (Fed. Cir. 1984), in evaluating the sufficiency of an anticipation rejection under 35 U.S.C. § 102, the Court stated:

> Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim.

Therefore, if the cited reference does not disclose each and every element of the claimed invention, then the cited reference fails to anticipate the claimed invention and, thus, the claimed invention is distinguishable over the cited reference.

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1. Claims 1-2, 29-30 and 35-36 were rejected under 35 U.S.C. §102(b) as being anticipated by Evoy.

Independent claims 1 and 29 have been amended to recite,

> determining a power consumption metric for each of a plurality of I/O devices connected to the computer system while the plurality of I/O devices are connected to the computer system, wherein the plurality of I/O devices are user interfaces for the computer system and are configured to be used by a user to input information to the computer system or to output information from the computer system to the user ... .

Evoy fails to teach determining a power consumption metric for each of a plurality of I/O devices while the I/O devices are connected to the computer system. The rejection states,

> In particular, Evoy teaches a power management unit (PMU) for powering off the most energy intensive component of a computer first. Evoy explains that a device, which consumes the most power in one computer system, does not necessarily consume the most power in another. Therefore, in order to identify which component uses the most power, it is inherent that the PMU must be able to determine each devices power usage.

Evoy discloses in column 2, lines 51-56, that a monitor generally uses the most power in a computer, however, for a laptop the monitor may not be the most energy intensive part of that computer.

Claim 1 recites determining a power consumption metric for each I/O device. Evoy does not disclose determining a power consumption metric for each I/O device. Instead Evoy makes generalization as to whether a monitor may be the most energy intensive part of the

computer. Evoy does not disclose making those generalizations by determining a power consumption metric for the monitor or for a plurality of I/O devices.

Furthermore, claim 1 has been amended to recite determining a power consumption metric for each of a plurality of I/O devices while the I/O devices are connected to the computer system. Unlike what the Examiner alleges in the rejection with respect to the PMU must being able to determine each devices power usage, the generalizations of Evoy may be predetermined so the PMU automatically shuts down the monitor first during a first stage. See column 2, lines 44-52. Thus, it is not inherent that the PMU of Evoy determines each devices power usage as alleged in the rejection. Instead, the PMU may simply be instructed to shut down the monitor based on a predetermined generalization that the monitor consumes the most power for a non-laptop computer. Thus, Evoy fails to teach determining a power consumption metric for the monitor while the monitor is connected to the computer system. Evoy fails to teach any measuring of power consumption or determination of any other power consumption metric.

In addition, claim 1 recites determining a power consumption metric for a plurality of I/O devices while the I/O devices are connected to the computer. Evoy only makes generalizations about whether the monitor is the most energy intensive part of the computer system. Evoy fails to teach determining a power consumption metric for a plurality of I/O devices.

For at least these reasons, independent claims 1 and 29 and their respective, rejected dependent claims are believed to be allowable.

2. Claims 23, 26 and 27 were rejected under 35 U.S.C. §102(b) as being anticipated by Frantz et al. (5,557,557), referred to as Frantz.

Independent claim 23 recites,

> profiling usage patterns of the I/O devices to establish a usage model, wherein the I/O devices are user interfaces for the computer system and are configured to be used by a user to input information to the computer system or to output information from the computer system to the user ... .

Frantz discloses determining energy consumption for a processor when executing a program and controlling execution of the program. Frantz fails to teach the claimed I/O devices connected to a computer system and providing user interfaces for the computer system. Accordingly, independent claim 23 and its dependent claims are believed to be allowable.

Claim 28 was indicated as including allowable subject matter but being dependent on rejected independent claim 26. Claim 28 has been combined with claim 26, and thus claims 26 and 27 are believed to be allowable.

3. Claims 1, 2, 12, 13, 16, 18, 21-23, 25 and 29-30 were rejected under 35 U.S.C. §102(a) as being anticipated over Orenstien.

Claim 1 recites, "I/O devices connected to the computer system." As indicating in the previous response, it is believed that the Examiner is taking an unreasonably broad interpretation of I/O devices that is outside the conventional meaning of I/O devices as is known in the art and that is outside the description of I/O devices in the specification. In the

Response to Arguments section on pages 8-9 of the Office Action, the Examiner disagreed. The Applicants still maintain the position that the Examiner's interpretation is unreasonable broad. However, to further expedite prosecution, independent claims 1, 23 and 29 have been amended to recite,

> wherein the I/O devices are user interfaces for the computer system and are configured to be used by a user to input information to the computer system or to output information from the computer system to the user ... .

Orenstein fails to teach determining power consumption metrics for the claimed I/O devices. In particular, Orenstein discloses a plurality of processing units and a monitor to obtain power consumption values for the processing units. See Abstract. The processing units are in cores in a multi-core processor. See column 2, lines 39-45. Thus, Orenstein discloses determining power consumption values for a processor, rather than for a plurality of input/output devices connected to a computer system, wherein the I/O devices include the claimed user interfaces. The processing units of Orenstein are not used by a user as a user interface for interfacing with a computer and to provide input to the computer system from a user or to output information to a user. Instead, the processing units may be used for processing the information after the information is received from a user using an I/O device.

Furthermore, claim 1 recites I/O devices connected to a computer system. The processing units in the multi-core processor are the computer system and thus they cannot be connected to a computer system.

For at least these reasons, claims 1, 2, 12, 13, 16, 18, 21-23, 25 and 29-30 are believed to be allowable.

Orenstien also fails to teach many features of the claims dependent on claim 1. Orenstien fails to teach identifying top power consuming I/O devices, as recited in claim 2. The rejection alleges the features of claim 2 are recited in column 5, lines 16-20, column 7, lines 5-8 and column 8, lines 41-43 of Orenstein. In column 5, lines 16-20, Orenstein discloses detecting when power consumed by one core is very high when compared to a second core. Thus, Orenstein discloses identifying a single high power consumption core rather than a plurality of top power consuming cores. Column 7, lines 5-8 and column 8, lines 41-43 of Orenstein also fail to teach identifying top power consuming I/O devices.

Claim 16 recites a constraint on reducing power consumption and reducing power consumption if the constraint can be maintained. The rejection alleges the features of claim 16 are taught in column 1, lines 6-18. Column 1, lines 6-18 discusses resultant thermal issues due to increased power consumption. However, the thermal issues are not a constraint on reducing power consumption. Instead, the thermal issues are the reason why power consumption must be reduced. For example, on page 21, lines 3-9 of the Applicant's specification, an example of a constraint is that a display cannot be placed in a low-power mode based on a user preference. Orenstien fails to disclose any such constraints on reducing power consumption.

Claim 18 recites generating a usage model from profiling usage of the I/O devices. The rejection alleges this feature is taught by the operational activity in Orenstien. However, the operational activity is profiling, rather than a usage model. No model is generated in Orenstien.

Claim 21 recites generating a power model from profiling power consumption of the I/O devices. Orenstein discloses profiling but fails to teach generating a model from the profiling.

Independent claim 23 recites I/O devices not taught by Orenstien. Also, claim 23 recites profiling usage patterns to establish a usage model and profiling power consumption to establish a power model. Orenstien fails to teach a usage model and a power model. Accordingly, claims 23-25 are believed to be allowable.

Claim Rejections Under 35 U.S.C. §103(a)

The test for determining if a claim is rendered obvious by one or more references for purposes of a rejection under 35 U.S.C. § 103 is set forth in MPEP § 706.02(j):

> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Therefore, if the above-identified criteria are not met, then the cited reference(s) fails to render obvious the claimed invention and, thus, the claimed invention is distinguishable over the cited reference(s).

Claims 4, 5, 24, 25 and 34 were rejected under 35 U.S.C. §103(a) as being unpatentable over Orenstien in view of Cai.

Claims 4, 5, 24, 25 are believed to be allowable for at least the reasons their respective independent claims are believed to be allowable.

Independent claim 34 has been amended to recite,

> wherein the processor is operable to determine a power consumption metric for each of a plurality of I/O devices connected to the computer system, select at least one of the plurality of I/O devices based on the determined power consumption metric and an estimation of future power consumption based on the power consumption metric for each of the plurality of I/O devices for a period of time in the future ....

Orenstien in view of Cai fails to teach or suggest the estimation of future power consumption based on the power consumption metric for each of the plurality of I/O devices for a period of time in the future. Accordingly, claim 34 is believed to be allowable.

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Conclusion

In light of the foregoing, withdrawal of the rejections of record and allowance of this application are earnestly solicited.

Should the Examiner believe that a telephone conference with the undersigned would assist in resolving any issues pertaining to the allowability of the above-identified application, please contact the undersigned at the telephone number listed below. Please grant any required extensions of time and charge any fees due in connection with this request to deposit account no. 08-2025.

Respectfully submitted,

Dated: June 12, 2007 By

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